



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,563	05/13/2004	Roy Gibbs I	81098893 / FMC 1748 PUSP	3562
28395 7590 03/09/2007 BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			EXAMINER CULBERT, ROBERTS P	
			ART UNIT 1763	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

6

Office Action Summary	Application No.		Applicant(s)	
	10/709,563		GIBBS ET AL.	
	Examiner		Art Unit	
	Roberts Culbert		1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1763

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 1/29/07 have been fully considered.

Applicant has argued that Zuel is not properly combinable with Martelli since the treatments of Zuel are applied directly to a surface whereas the treatments of Martelli are to a mold surface.

The argument is not persuasive since one of ordinary skill in the art would readily appreciate that the raised portions of a mold correspond to the depressed portions of a molded surface and that the depressed portions or "average spacing" of a mold correspond to the raised portions of a molded surface. Thus the size of the features of a mold (Martelli) is directly relevant to the size of the features of a desired product surface (Zuel).

Applicant has argued that Luetgert et al. does not describe the use of two different patterns as specifically recited in claim 6 of the present application. Rather, Luetgert et al. discusses the use of multiple pattern transfers, presumably having the same pattern, and that is why it is important to "align and join" them together so that there is no obvious line of demarcation between different pattern transfers. There is nothing to indicate that two separate patterns are being used as specifically recited in claim 6 of the present application.

The argument is not persuasive because Luetgert teaches the recited limitations as broadly recited by applicant. It is noted that Claim 1 recites only "*another pattern different from the tool surface pattern*". However, even if the claims recited patterns having a different shape, for example, it is noted that Luetgert et al. teaches different shape patterns to form tonal portions.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious

Art Unit: 1763

at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1-6 are rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent Application Publication 2004/0071936 to Martelli, in view of the Publication "Etching in Microsystem Technology" to Köhler and U.S. patent 4,944,986 to Zuel.

Regarding Claim 1, Martelli teaches a method for producing a mold tool to achieve a reduced gloss (matte) appearance on a surface of a polymeric component (Paragraphs 3-15) produced with the tool, the method comprising: masking a portion of a surface of the tool with a plurality of characters arranged in a character pattern, and applying an etching material to the tool surface, (See Paragraphs 25-33) thereby removing material from an unmasked portion of the tool surface and leaving the masked portion raised above the unmasked portion and forming a tool surface pattern generally matching the character pattern, the tool surface pattern including a plurality of raised portions (lands), the tool surface pattern thereby providing a reduced gloss (matte) appearance on a corresponding surface of a polymeric component produced with the tool. Note that *caustic* is interpreted any substance that is capable of destroying or eating away by chemical action.

Martelli suggests using etching such as chemical etching to form the depressions and lands. (Paragraphs 26-29) However, Martelli does not expressly recite the steps of masking the surface. However, masking is a conventional step of preparing a surface for selective chemical etching to form a patterned material layer as recited in Martelli. For example, Köhler teaches that the step of masking is

Art Unit: 1763

conventional in chemical etching processes to provide etching in a desired pattern. Figures 2-2 and 2-3 of Köhler clearly illustrate the conventional steps including: masking a portion of a surface of the tool with a plurality of characters arranged in a character pattern, and applying an etching material to the tool surface, thereby removing material from an unmasked portion of the tool surface and leaving the masked portion raised above the unmasked portion and forming a pattern generally matching the character pattern, the surface pattern including a plurality of raised portions as broadly recited in Claim 1. Further, the photoresist/masking step is conventional in the art as admitted by applicant. (See Paragraph 17 of Specification)

Further regarding Claim 1 and Claims 3-5, Martelli teaches the depth of depressions is 0.1-100 μm (Paragraph 29) and may have varying density with a ratio of depressions to lands "preferably from about 50 to 80 percent". Martelli further teaches that the width of the depressions that define raised portions (lands) may vary as needed in order to form the desired aesthetic appearance such as diffused light effect (Paragraphs 8, 26 and 31), but does not expressly provide that the maximum width of the raised portions is less than 350 μm or 225-275 μm , average spacing less than 450 μm , or density greater than 6000 raised portions per square inch. However, it is notoriously old and well known in the science of scattering light (diffusion) that the width and density of depressions and raised portions may vary within the recited micron range, in order to produce a diffusion of light effect on a surface, such as gloss reduction as recited in Martelli. For example, Zuel teaches that for forming a light diffusion effect on a surface, raised portions may have a maximum width of 10-120 μm , a spacing of 100-2000 μm , and teaches a density of 25-500 raised portions per square millimeter. Note that as one of ordinary skill in the art would readily appreciate, the raised portions of a mold correspond to the depressed portions of a molded surface and would thus be in a range of 100-2000 μm . Similarly, the depressed portions or "average spacing" of a mold correspond to the raised portions of a molded surface and would thus be in a range of 10-120 μm .

Thus, in view of Martelli, which teaches the depth of depressions is 0.1-100 μm and a ratio of depressions to lands from about 50 to 80 percent and that the width of the depressions that define raised portions may vary as needed in order to form the desired aesthetic appearance such as diffused light

Art Unit: 1763

effect appearance, (Paragraphs 8, 26 and 31) and Zuel which teaches the well-known feature size range for such diffused light effect appearance, it would have been obvious to one of ordinary skill in the art at the time of invention to provide maximum width of the raised portions is less than $350\mu\text{m}$ or $225\text{-}275\mu\text{m}$, average spacing less than $450\mu\text{m}$, or density greater than 6000 raised portions per square inch, in order to provide gloss reduction to the molded product having varying aesthetic appearance.

Regarding Claim 2, Martelli teaches a feature height of about 0.1-100 microns. (Paragraph 29)

Regarding Claim 5, the term cylindrical is broadly defined by applicant to include non-circular, oval and polygonal shapes (*See Specification, Paragraph 26*) and so does not define over the shapes of Martelli. Note that Claim 5 recites merely a "maximum width" and thus broadly reads on any width less than 275 microns as well as within the recited range

Regarding Claim 6, Martelli teaches providing the tool surface with another pattern different from the tool surface pattern, thereby providing a corresponding aesthetic pattern to a corresponding surface of a polymeric component produced with the tool. Note that the "another pattern" reads broadly on the pattern formed in the mold to define the object itself, the additional patterning formed by the additional blasting step (Paragraph 32), the added colorant (Paragraph 12), or the different regions with varied lands and depressions (Paragraph 31)

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0071936 to Martelli, in view of "Etching in Microsystem Technology" to Köhler and U.S. patent 4,944,986 to Zuel and in further view of U.S. Patent 6,988,342 to Luetgert et al.

Regarding Claim 6, as applied above, Martelli teaches an additional pattern that is formed in the mold to define the object itself, the additional patterning formed by the additional blasting step (Paragraph 32), the added colorant (Paragraph 12), or the varied pattern of lands and depressions (Paragraph 31) However, Luetgert et al. further teaches that it is old to align and join different patterns together as required to cover the surface to be etched. (Col. 7, Lines 51-56) Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the tool surface with another pattern different

Art Unit: 1763

from the tool surface pattern, in order to provide a continuous pattern on the surface of the tool, as this step is entirely conventional in the printing art.

Regarding Claim 7, Martelli does not expressly teach the details of the masking, however the recited steps are entirely conventional in the pattern forming art. For example Luetgert et al. teach at least partially filling portions of an exposed plate with a spreadable material (wax), applying transfer paper to the metallic plate, transferring the wax from the paper to a mold tool surface and etching the mold tool surface. (Col. 7, Lines 44-51) It would have been obvious to one of ordinary skill in the art at the time of invention to use conventional patterning methods for pattern transfer.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0071936 to Martelli, in view of "Etching in Microsystem Technology" to Köhler, U.S. patent 4,944,986 to Zuel and U.S. Patent 6,988,342 to Luetgert et al. and in further view of U.S. Patent 3,656,951 to Anderson et al.

Regarding Claim 8, Martelli does not expressly teach the etch rate of 25 microns per three minutes, however, the etch rate is simply an inherent result of the selected etchant, metal and process conditions such as concentration and temperature. It would have been obvious to one skilled in the art at the time of invention to select from known metals and caustics to achieve a suitable etch rate for the selected metal.

Moreover the formation of lithographic masters from zinc using FeCl_3 solutions is old in the lithography art and would inherently provide the etch rate using suitable process conditions to form suitably shaped depressions. For example, U.S. Patent 3,656,951 to Anderson et al. teach using ferric chloride as an etchant for zinc printing plates. (Col. 4, Lines 56-60)

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0071936 to Martelli, in view of "Etching in Microsystem Technology" to Köhler, U.S. patent 4,944,986 to Zuel and U.S. Patent 6,988,342 to Luetgert et al. and in further view of U.S. Patent 4,020,762 to Peterson.

Art Unit: 1763

Regarding Claim 9, Martelli teaches laser etching for forming cavities in the metal mold, (Paragraph 27), but Martelli in view of Luetgert do not expressly teach laser etching may be used to form the cavities in a master printing plate. However, Peterson teaches that it is old in the art of forming patterns in a metal printing plate to use laser etching. It would have been obvious to one of ordinary skill in the art at the time of invention to use laser etching in order to provide high resolution printing plates in the conventional manner.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0071936 to Martelli in view of "Etching in Microsystem Technology" to Köhler, U.S. patent 4,944,986 to Zuel and U.S. Patent 6,988,342 to Luetgert et al. and in further view of U.S. Patent 3,719,5356 to Rheingold et al.

Regarding Claim 10, Martelli teach an average feature depth of 0.1 to 100 microns, however Martelli in view of Luetgert do not expressly teach depth of the pattern formed in the printing plate. However, Rheingold et al. teach that it is old in the art of etching with a resist to use a thickness of approximately 0.002 in (50 microns) and generally to use a thickness less than 0.005 in (127 microns) since no particular advantage in using additional thickness. (Col. 12, Lines 30-40) It would have been obvious to one of ordinary skill in the art at the time of invention to use a depth of approximately 37 microns as claimed, in order to provide suitable protection thickness for the printed resist without wasting material.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0071936 to Martelli in view of "Etching in Microsystem Technology" to Köhler, U.S. patent 4,944,986 to Zuel and in view of U.S. Patent 5,596,912 to Laurence et al.

Regarding Claims 11 and 12, Martelli teach performing a conventional abrasive blasting process after the etching process. (Paragraph 32) Martelli does not teach the steps of blasting with multiple steps using a smaller abrasive size. However, the steps of abrasive blasting using a smaller mesh size is

Art Unit: 1763

conventional in the art of abrasive blasting. For example, Laurence et al. teaches that using progressively smaller abrasive bead sized results in favorable appearance properties. (See Columns 1-4) It would have been obvious to one of ordinary skill in the art at the time of invention to use abrasive blasting in multiple steps using smaller size abrasives in order to provide the desired surface finish.

Regarding the particular abrasive sizes claimed, selection from the commercially available abrasives would have been obvious to one skilled in the art as a matter of producing a surface having the desired texture and gloss characteristics.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



R. Culbert
Examiner
Art Unit 1763



PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER